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10/628,503

07/28/2003

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EXAMINER

COLEMAN, WILLIAM D

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/628,503  
Filing Date: July 28, 2003  
Appellant(s): CHEUNG ET AL.

\_\_\_\_\_  
Lawrence A. Hoffman  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed July 30, 2007 appealing from the Office action mailed May 31, 2005.

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**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

EP 0 431 637 A1	Nishiguchi	June 1991
6,201,306 B1	Kurosawa et al.	March 2001

### **(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

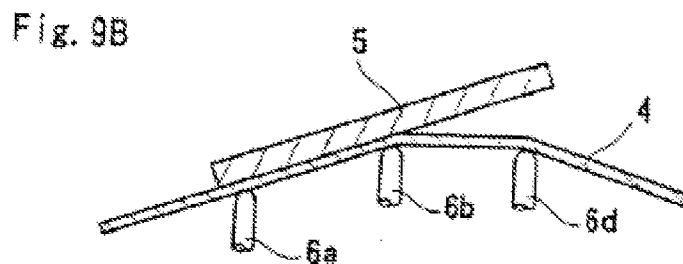
#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 21, 2, 6, 7, 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishiguchi, European Patent Application Publication EP 0 431 637 A1.
3. Nishiguchi discloses an apparatus as claimed. Please see **FIGS. 1-10**, where Nishiguchi teaches the claimed invention.



4. Pertaining to claim 21, Nishiguchi teaches an apparatus for detachment of a thin die from a film, the film having a adhesive surface on which a plurality of dice are mounted, the apparatus comprising:

an ejector device comprising a plurality of ejector pins **6a-6d**;

the ejector pins being operative to initiate detachment of a die from the film by contacting the film under the die on a second surface of the film opposite the adhesive surface substantially at the corners of the die within a predetermined distance from the edges of said die and by raising the film under the corners of the die to separate the film under the corners of die is from the die; and

a collect operative to detach the die from the film after detachment has been initiated by the ejector device, an to hold the die after detachment from the film.

5. Pertaining to claim 2, Nishiguchi teaches an apparatus as claimed in claim 21, wherein the predetermined distance is determinable by considering one or more factors in the group consisting of the thickness, size and elastic modulus of the die, the thickness and elastic modulus of the film, the interfacial adhesive strength between the die and the elastic surface of the film and the shape and size of the ejector pin (the Examiner takes the position that since not all dice are the same size and the pins 14 are aligned along the perimeter these factors claimed are considered).

6. Pertaining to claim 6, Nishiguchi teaches an apparatus as claimed in claim 21, including a vacuum ejector platform for supporting a portion of the film on which the die to be detached is mounted while the film is contacted by the ejector device.

7. Pertaining to claim 7, Nishiguchi teaches an apparatus as claimed in claim 6, including apertures corresponding substantially to positions of each corner of the die to be detached, wherein the ejector pins are houseable within the vacuum ejector platform and projectable

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through said apertures for contacting the die.

8. Pertaining to claim 8, Nishiguchi teaches an apparatus as claimed in claim 21, wherein the ejector device comprises at least four ejector pins, each ejector pin corresponding to a position substantially at a corner of the die.

9. Pertaining to claim 9, Nishiguchi teaches an apparatus as claimed in claim 8, including one or more ejector pins corresponding to a position substantially at a center portion of the die.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 3, 4, 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiguchi, European Patent Application Publication EP 0 431 637 A1.

12. Given the teaching of the references, it would have been obvious to determine the optimum thickness, temperature as well as condition of delivery of the layers involved. See *In re Aller, Lacey and Hall* (10 USPQ 233-237) “It is not inventive to discover optimum or workable ranges by routine experimentation. Note that the specification contains no disclosure of either the critical nature of the claimed ranges or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 f.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

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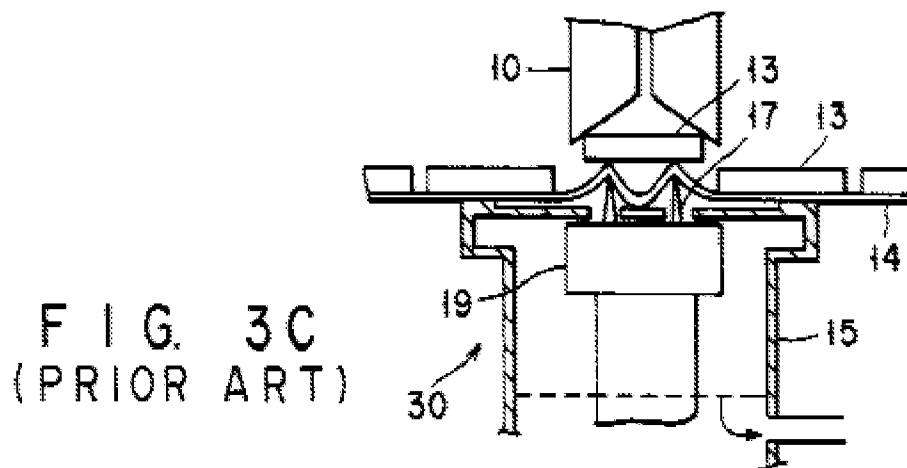
Any differences in the claimed invention and the prior art may be expected to result in some differences in properties. The issue is whether the properties differ to such an extent that the difference is really unexpected. *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986)

Appellants have the burden of explaining the data in any declaration they proffer as evidence of non-obviousness. *Ex parte Ishizaka*, 24 USPQ2d 1621, 1624 (Bd. Pat. App. & Inter. 1992).

An Affidavit or declaration under 37 CFR 1.132 must compare the claimed subject matter with the closest prior art to be effective to rebut a prima facie case of obviousness. *In re Burckel*, 592 F.2d 1175, 201 USPQ 67 (CCPA 1979).

13. Claims 21, 2, 6, 7, 8 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Kurosawa et al., U.S. Patent 6,201,306 B1.

14. Kurosawa discloses an apparatus as claimed. Please see **FIGS. 1-31**, where Kurosawa teaches the claimed invention.



15. Pertaining to claim 21, Kurosawa teaches an apparatus for detachment of a thin die from a film, the film having a adhesive surface on which a plurality of dice are mounted, the apparatus comprising:

an ejector device comprising a plurality of ejector pins 17;

the ejector pins being operative to initiate detachment of a die from the film by contacting the film under the die on a second surface of the film opposite the adhesive surface substantially at the corners of the die within a predetermined distance from the edges of said die and by raising the film under the corners of the die to separate the film under the corners of die is from the die; and

a collect operative to detach the die from the film after detachment has been initiated by the ejector device, an to hold the die after detachment from the film.

16. Pertaining to claim 2, Kurosawa teaches an apparatus as claimed in claim 21, wherein the predetermined distance is determinable by considering one or more factors in the group consisting of the thickness, size and elastic modulus of the die, the thickness and elastic modulus of the film, the interfacial adhesive strength between the die and the elastic surface of the film and the shape and size of the ejector pin (the Examiner takes the position that since not all dice are the same size and the pins 14 are aligned along the perimeter these factors claimed are considered).

17. Pertaining to claim 6, Kurosawa teaches an apparatus as claimed in claim 21, including a vacuum ejector platform for supporting a portion of the film on which the die to be detached is mounted while the film is contacted by the ejector device.

18. Pertaining to claim 7, Kurosawa teaches an apparatus as claimed in claim 6, including apertures corresponding substantially to positions of each corner of the die to be detached, wherein the ejector pins are houseable within the vacuum ejector platform and projectable through said apertures for contacting the die.



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19. Pertaining to claim 8, Kurosawa teaches an apparatus as claimed in claim 21, wherein the ejector device comprises at least four ejector pins, each ejector pin corresponding to a position substantially at a corner of the die.

20. Pertaining to claim 9, Kurosawa teaches an apparatus as claimed in claim 8, including one or more ejector pins corresponding to a position substantially at a center portion of the die.

***Claim Rejections - 35 USC § 103***

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

22. Claims 3, 4, 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurosawa et al., U.S. Patent 6,201,306 B1.

23. Given the teaching of the references, it would have been obvious to determine the optimum thickness, temperature as well as condition of delivery of the layers involved. See *In re Aller, Lacey and Hall* (10 USPQ 233-237) “It is not inventive to discover optimum or workable ranges by routine experimentation. Note that the specification contains no disclosure of either the critical nature of the claimed ranges or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 f.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Any differences in the claimed invention and the prior art may be expected to result in some differences in properties. The issue is whether the properties differ to such an extent that

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the difference is really unexpected. *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986)

Appellants have the burden of explaining the data in any declaration they proffer as evidence of non-obviousness. *Ex parte Ishizaka*, 24 USPQ2d 1621, 1624 (Bd. Pat. App. & Inter. 1992).

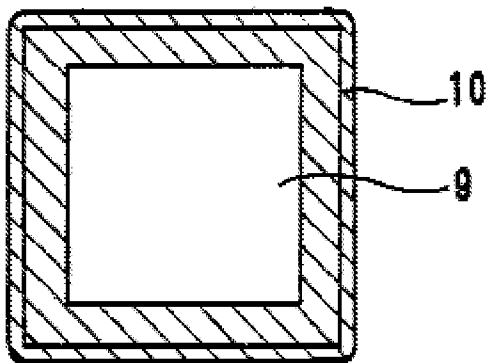
An Affidavit or declaration under 37 CFR 1.132 must compare the claimed subject matter with the closest prior art to be effective to rebut a prima facie case of obviousness. *In re Burckel*, 592 F.2d 1175, 201 USPQ 67 (CCPA 1979).

### **(10) Response to Argument**

Applicants contend that Nishiguchi, European Patent Application Publication EP 0 431 637 A1 nor Kurosawa et al., U.S. Patent 6,201,306 B1 alone nor together teaches Applicants invention, namely, separating a semiconductor die from an adhesive tape using at least mechanical pins substantially near the corners of a semiconductor die. Taking independent claim 21 into perspective, it appears that Applicants are implying that the pins are **specifically** at the corners of the semiconductor die whereas the term in claim 21 uses the term “**substantially at the corners**”, which is broad enough to be interpreted to mean *either* more than two pins are near the corners of the semiconductor die or the pins are somewhat near the corners of the semiconductor die (since most semiconductor dies are either rectangular or square, it is safe to say that there are at least four corners). The specification does not provide any measurable distance to convey what the term “substantially” means other than a reasonably broad interpretation that includes both more than two pins are at or near the corners of the die and the pins are near the corners of the semiconductor die. The Examiner would also like to note that the pins being directly at the corners of the semiconductor die will not separate the adhesive film (i.e., tape) from the semiconductor die since pressure from the pins will not allow the tape to immediately separate

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from the die during the push up phase from the pins. Please note that although Applicants drawings discloses a square semiconductor die with pin locations near the corners, the drawings are not to scale and does not provide any substantial evidence of what the term “substantially” means and how the term used would overcome the prior art of record. Nishiguchi further provides support on page 6, lines 38-45, also lines 46-54 and figure **8a-8c** where Nishiguchi teaches that some modifications of the second embodiment for the present invention a portion **10** (hatched portion) of an adhesive area **9** to which an ultraviolet beam is radiated corresponds to a portion to which a corner portion of the semiconductor chip **5** is fixed. It is also the area in which the pins make contact with the adhesive film.



For the reasons supported by the prior art, the present Application has failed to overcome the pending rejections.

#### ***Objections***

24. Claim 22 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

For the above reasons, it is believed that the rejections should be sustained.

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**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Respectfully submitted,

/W. David Coleman/  
Primary Examiner

Conferees:

**Drew A. Dunn**  
**/D. A. D./**  
**TQAS, TC 2800**

Matthew Smith, Supervisory Primary Examiner

/Matthew S. Smith/

Supervisory Patent Examiner, Art Unit 2823